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AUTHOR Wood, James L.
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ABSTRACT

Volume I of this three-volume final report contains a summary of the objectives and results of a study conducted by Chemical Abstracts Service (CAS), a Division of the American Chemical Society (ACS), to determine the availability of the scientific and technical primary literature which the user identifies through the use of secondary services such as "Chemical Abstracts." The secondary services are not intended to substitute for the primary literature but to aid the individual by analyzing the literature and creating abstracts and indexes. Once a user has identified, through the secondary service, the primary literature in which he is interested, he can turn to the library for access to that literature. The purpose of the study was to determine the availability of this literature from the user's local libraries or from other libraries via the interlibrary loan system. Recommendations drawn from the study are: (1) scientific and technical serials are not widely enough available to users in the U.S.; (2) borrowing of such documents through interlibrary loan is both uncertain and time-consuming; (3) specialized document collections are needed as backup resources for the library community, and (4) the results of this study are generally applicable across the full range of science and technology. Volume II (LI 002 455) presents background detail, and Volume III (LI 002 456) contains the bibliography and appendixes for the study. (AB)

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FINAL REPORT

Project No. 7-0930
Contract No. OEC-1-7-070930-5145

A REVIEW OF THE AVAILABILITY OF PRIMARY SCIENTIFIC AND TECHNICAL DOCUMENTS WITHIN THE UNITED STATES

VOLUME I

James L. Wood

Chemical Abstracts Service
The Ohio State University

Columbus, Ohio 43210

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VOLUME I

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PREFACE

A. The Availability of Scientific and Technical Literature

This three-volume Final Report, conducted by Chemical Abstracts Service (CAS), a Division of the American Chemical Society (ACS), presents a study of the availability of the scientific and technical primary literature which the user identifies through the use of secondary services such as Chemical Abstracts. The secondary services are not intended to substitute for the primary literature but to aid the individual by analyzing the literature and creating abstracts and indexes. Once a user has identified, through the secondary service, the primary literature in which he is interested, he can turn to the library for access to that literature. The purpose of the study was to determine the availability of this literature from the user's local libraries or from other libraries via the interlibrary loan system.

B. The Organization of This Report

Volume I of this Final Report contains a summary of the objectives and results of the study, together with Recommendations drawn from the study. It is intended as the "capping" document for those readers who need to know the results and recommended action of the study, but who cannot afford the time to review the study in detail.

Volume II presents in detail the Background, Approach, Methods, Conclusions, and Results of the study. It is intended to supply enough detail that the critical reader may review the entire study in depth, evaluating the results and conclusions in their full context.

Volume III contains the bibliography and appendixes for the study, and is thus the repository for supportive and historical material that backs up the main text of the study.

The detailed Table of Contents for this Final Report is presented in Volume II.

SUMMARY

This review was undertaken to determine whether scientific and technical literature -- specifically, serials and conference proceedings volumes -- is actually available to users in the United States either from their local libraries or in the form of interlibrary loans from other libraries. It was also designed to measure the effectiveness of the present interlibrary loan system, to gauge the U. S. library community's need for access to the restricted document collections of secondary information processors, and to study the relevance of serials of chemical and chemical engineering interest to related disciplines.

Stated in their essence, the conclusions of this study are: (1) that scientific and technical serials and conferences proceedings volumes are not widely enough available to users in the United States; (2) that the borrowing of such documents through interlibrary loan is both uncertain and time-consuming; (3) that specialized document collections are needed as backup resources for the library community; and (4) that the results of this study are generally applicable across the full range of science and technology.

Three data bases were used in this study. The first was a file of bibliographic data and library holdings information collected by CAS and some 325 U. S. Resource Libraries at no cost to the contract. ACCESS, the result of a non-contract project, was used by CAS to identify journals and conference proceedings volumes that are pertinent to the subject areas of chemistry and chemical engineering.

The second file contained interlibrary loan information collected during the course of the contract from over 70,000 interlibrary loan and facsimile requests provided by 19 participating United States libraries located in nine Office of Education regions. The third file identified the relevance of over 27,000 scientific and technical serials to a number of different scientific and technical disciplines and subject areas. This file included data on titles in the collection of the CAS Library.

The review revealed that collectively, the 325 libraries which had participated in the ACCESS project held complete sets of 10,810 of the 16,361 serials listed as pertinent to chemistry and chemical engineering, partial sets for 4321 of the serials, and no sets of of 1230 of the serials. Significant variations were found when comparing the collective holdings within a given state and within a given U. S. Office of Education (USOE) Region.

This review also determined that of the 3197 core serials identified as having prime importance to various scientific and technical disciplines, 2565 were held completely, 608 were held partially, and 24 core serials were not held. These findings led to the conclusion that not all scientific and technical serials are available in the United States.

The 70,686 interlibrary loan requests represented 59,484 that had been filled and 11,202 that were unfilled. Examination revealed that 12,282 different publications had been requested: 11,370 serials and 912 conference proceedings volumes. Of these, 5444 publications had been requested only once, while 6838 had been requested two or more times. Fifty percent of all the requests were for papers that had been published in only 850 serials. Thus, if the requestors had had local access to these 850 serials, the volume of interlibrary loan traffic could have been cut in half. If only 195 serials had been locally available, the traffic could have been 25 percent less.

Various factors that might affect the time required to process interlibrary loans were studied, e.g., age, length, language, form of the request, the practice of ordering more than one item with the same request letter, etc. Of the total interlibrary loan requests, 56 percent were for documents published since 1959 and 81 percent were for documents published in English. For 65 percent of the 70,686 requests, the documents ordered contained ten or fewer pages. Three media were used to fill requests: originals, photocopies, and microfilms, with 86 percent being filled with photocopies. Most requests, 89 percent of the total, were transmitted from requestor to recipient library by mail, while the study found that there was more use made of courier than of TWX. Each of these were examined on the basis of the location of the requestor and the recipient library, and although each of these factors has a different bearing on whether or not the request was filled or the speed with which it was filled, none of the factors stood out as a major cause of non-fulfillment or delay in fulfillment.

This analysis also disclosed that 53 percent of the 11,202 unfilled requests had been sent to libraries that did not own the requested item at the time of request receipt, while 20 percent were unfilled because the recipient library, although owning the item, could not make it available. Another 10 percent of the requests were not filled because of the use of faulty references.

Because the use of interlibrary loans to fill user requirements for documents is an established necessity, steps to improve both the efficiency and effectiveness of interlibrary lending have been recommended by this study. Specifically, it was found that this means of providing access to documents would be improved

if borrowing libraries maintained basic serial collections chosen to reduce the volume of traffic and if they had more adequate and up-to-date identification and location guides so that more of the interlibrary loans could be directed immediately to libraries that could fill the requests. It was further determined that a decrease in traffic volume would doubtless result in faster processing by the request recipient.

The value of the CAS Library collection as a backup resource for the U. S. library community was established by checking lists of serials and conference volumes not held by the 325 U. S. libraries against an inventory of the CAS Library. Of the 1230 serials not held by the 325 libraries, 619 were held by CAS for the years after 1955. Also, 307 of the 409 missing conference proceedings volumes are held by CAS. Analysis also showed that 4267 of the 11,202 unfilled interlibrary loans could have been filled from the current CAS collection and that an additional 3797 requests were for documents once owned by CAS but since distributed to others.

Several analyses were made to ascertain the relevance of the results of the study to scientific and technical disciplines other than chemistry and chemical engineering. For these analyses, the "overlap" of journals pertinent to chemistry and chemical engineering with journals of other disciplines was determined, as was the overlap with lists of high-usage scientific and technical journals. These studies showed that the results of this study are generally applicable across the full range of science and technology.

RECOMMENDATIONS

This review has identified deficiencies in the techniques employed to make scientific and technical serials and conference proceedings publications available to the user community. Serials of established importance to science and technology are not available from at least 325 of the major resource libraries in the United States and in all likelihood are also not available from other U. S. libraries. Conference proceedings volumes are likewise lacking in the collections of these 325 libraries. The review of the effectiveness of interlibrary loan has shown that fulfillment of user needs by interlibrary loans is uncertain as well as time-consuming.

There are several actions that could be taken to improve the availability of scientific and technical serials and conference proceedings publications. These include the following specific recommendations of this study.

1. *Scientific and technical secondary information services should provide the resource library community more direct assistance to assure the availability of cited documents.*

   This could be accomplished in several ways.

   a. These secondary information services could routinely provide the libraries that subscribe to their services with lists of the publications they monitor along with acquisition information and indication of the frequency of citation to guide the libraries' acquisition programs.

   b. Each secondary service could currently and routinely deposit the documents it covers at one or more of the established libraries that are able to provide efficient and effective interlibrary loan service.

2. *Libraries serving scientists and engineers should maintain reference copies for a basic set of scientific and technical journals, thereby increasing local availability and reducing their dependency on the resources of other libraries.*

   This study, like others that have preceded it, has identified "high use" serials, yet there is no evidence that local libraries use these lists as acquisition

guides or that they attempt to maintain adequate files of these serials in order to cover local requirements.

3. *Additional programs should be implemented to provide the user community with comprehensive, up-to-date guides for identifying and locating scientific and technical documents.*

This review identifies some of the problems that result when requestors do not properly identify cited documents or when they do not direct their requests to libraries that maintain files of the documents they need.

The work done to date on the National Serials Data Program and the publication of ACCESS*, as well as the publication of other union lists illustrate the feasibility of producing a computer-based union list for all of science and technology which would include substantially more identification and location data, for instance, than are included in ACCESS or are planned for inclusion in any announced future union lists.

The problems of implementing such additional programs are significant. For a unified attack on the problem, a central authority needs to be identified to manage the effort. The requirements of all affected parties, libraries, primary and secondary journal publishers, and subscription agencies, would need to be considered. Funding would be required.

It is possible that the best approach to this goal would be full community support and participation in the planning of the second phase of the National Serials Data Program, the National Serials Pilot Project which proposes to provide a union list of the currently received scientific and technical serials held by the Library of Congress, the National Library of Medicine, and the National Agricultural Library.

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* ACCESS, which was prepared by the Chemical Abstracts Service using data supplied by nearly 400 U. S. and foreign libraries, identifies serials and conference proceedings volumes important to chemistry and gives the holdings of each of the cooperating libraries for these sources.

4. *Since the availability of the full range of scientific and technical documents to users throughout the United States will always depend upon libraries' sharing their resources, then improvement in loan requesting, communication, processing fulfillment, and referral techniques should be made.*

Although it was not within the stated work scope of this contract to design a national interlibrary loan system, it is clear that the de facto system which currently exists will require formalization before needed improvements in the overall interlibrary loan process can be brought about. The flow of interlibrary loan traffic needs to be both curtailed and controlled, but in neither instance should this be done to the disadvantage of the user.

The volume of interlibrary loan traffic could be curtailed if the libraries serving scientists and engineers maintained files of the more frequently used serials, such as those listed in the Appendixes of this report and those identified by similar studies. The flow of interlibrary loan traffic could be controlled by adopting some sort of an interlibrary loan traffic network. For example, one library in each USOE Region could be designated to process requests for a specified group of serials that might be considered to be in the average use range. A smaller group of libraries -- for example, the three national libraries in Washington and the Center for Research Libraries in Chicago -- could be designated as the recipient of requests for a defined group of serials in the low use range. Such a plan would require a large number of libraries located throughout the country to have what might be considered a 25 percent collection; that is, one that held the titles that would satisfy 25 percent of the user requests. The regional libraries would have to hold the titles that would satisfy the next 50 percent of the user requests, and the national libraries, along with the Center for Research libraries, would have to hold the remaining large number of the titles required to satisfy the final 25 percent of the requests. Prerequisite to the successful operation of this plan would be that the user have the document location and identification tools mentioned in recommendation 3, and that the libraries responsible for a specific block of serials impose use controls on their holdings in order to maintain file integrity and availability.

A great deal of attention has been focused over the years on this interlibrary loan question. Many steps have been taken on the local level, but the degree of efficiency and effectiveness of this method of making needed documents available will probably not enjoy any substantial improvements until the interrelationships of the various interests involved are better understood and until some systematic approach is taken to the problem on the national level.